Texas Water Development Board

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TO: Board Members

THROUGH: Melanie Callahan, Executive Administrator
Robert E. Mace, Deputy Executive Administrator, Water Science & Conservation
Ingrid Hansen, Deputy General Counsel
Larry French, Director, Groundwater Resources Division
David Carter, Manager, Contracting and Purchasing
Angela Gutierrez, Budget Officer, Water Science & Conservation

FROM: Cynthia K. Ridgeway, Manager, Groundwater Availability Modeling Section

DATE: July 11, 2012

SUBJECT: Contracts for Research in Support of the Groundwater Availability Modeling Program

ACTION REQUESTED

Authorize the executive administrator to negotiate and execute contracts for research in support of the Groundwater Availability Modeling Program no later than November 30, 2012,, and to transfer up to $900,000 from the Water Assistance Fund to the Research and Planning Fund ($720,135 from fiscal year 2012 budget and $179,865 from fiscal year 2013 budget).

BACKGROUND

At the April 19, 2012, Board meeting, the TWDB authorized staff to publish a request for statements of qualifications for the following two groundwater availability modeling related projects in the Texas Register (see Attachment A).

High Plains Aquifer System Modeling Project

As part of the modeling program, we periodically reassess the models for updates as a result of the collection of new data that improves our understanding of the aquifer systems and/or how they respond to stresses upon the system, as well as to better address the needs and objectives of planning by groundwater conservation districts and regional water planning groups. The models in the High Plains area of Texas have been reviewed using these criteria and need improvements.

The current groundwater availability models for the northern portion of the Ogallala Aquifer (which include the Rita Blanca Aquifer) and the southern portion of the Ogallala Aquifer (which includes the Edwards-Trinity [High Plains] Aquifer) assume no flow to the underlying hydrogeologic units, such as the Dockum Aquifer. On the other hand, the conceptualization of groundwater flow for the confined portions of the Dockum Aquifer depends on flow originating from the Ogallala Aquifer. This will become more of a concern as a result of the continual pumping projected to occur in the Ogallala Aquifer as part of the desired future condition adopted by the groundwater conservation districts in groundwater management areas 1 and 2.

We propose to combine the models for the northern portion of the Ogallala/Rita Blanca aquifers and the southern portion of the Ogallala/Edwards-Trinity (High Plains) aquifers with the model of the Dockum Aquifer to represent the dynamic flow regime of the High Plains Aquifer System. Part of this project will be to re-evaluate flow between these aquifers and to re-evaluate their boundaries using the geophysical well logs compiled by staff in the Innovative Water Technologies Division. We also propose a re-evaluation of the location and volume of historical pumping. Additional information from the groundwater conservation districts located in the study area would be requested, reviewed, and used, as applicable, to the modeling effort. The total cost of the three-year project would not exceed $600,000.

Educational Videos Project

An important and essential component of the Groundwater Availability Modeling Program is to continually develop better tools to aid in the understanding and analyses of the aquifers in Texas. Some of the biggest challenges in communicating with the general public and various key personnel responsible for groundwater resources planning about numerical flow models are related to:

1. How are aquifers similar and different across the state?
2. Do the aquifers respond differently to pumping in the confined portion versus the unconfined portion of the aquifers?
3. What is a water budget?
4. What is a numerical groundwater flow model?
5. How does fresh and brackish groundwater relate to each other?
6. What is a regional scale model? and
7. How are modeled available groundwater estimates calculated using the groundwater availability models?

We propose an educational project using pre-existing three-dimensional visual tools to help educate and explain the major aquifers of Texas, to provide a basic tutorial on aquifer systems, and to elucidate how regional numerical groundwater models are used in Texas. The total cost of the three-year project would not exceed $300,000.

KEY ISSUES

The request for statements of qualifications was published in the May 4, 2012, issue of the Texas Register (see Attachment A). We received a total of eight statements of qualifications by close of business on May 31, 2012, for the two proposed projects (see Attachment B). TWDB staff reviewed statements of qualifications and quantitatively evaluated the proposals according to a set list of criteria. In the case of the educational videos, due to the closeness of scores, staff requested oral presentations on July 2, 2012, and evaluated the top three candidates. Point totals were used to rank the applicants.

RECOMMENDATIONS

Staff recommends authorizing the Executive Administrator to take necessary actions to negotiate and execute contracts on or before November 30, 2012, with the top-ranked applicants for the two projects (Attachment B). If a contract cannot be negotiated with the top-ranked candidate, TWDB staff will proceed with contract negotiations with the second-ranked candidate (Attachment B). Staff also recommends authorizing the transfer of up to $900,000 from the Water Assistance Fund to the Research and Planning Fund ($720,135 from fiscal year 2012 budget and $179,865 from the fiscal year 2013 budget for reimbursement of services rendered in fiscal year 2013).

This recommendation has been reviewed by legal counsel and complies with applicable statutes and TWDB rules.

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Ingrid Hansen
Deputy General Counsel

ATTACHMENTS

Attachment A: Texas Water Development Board Requests for Statements of Qualifications for Water Research Published in the May 4, 2012, Texas Register Docket 201202039

Attachment B: Summary of Staff Recommendations

Attachment A

Texas Water Development Board
Requests for Statements of Qualifications for Water Research
Published in the May 4, 2012, Texas Register Docket 201202039

Pursuant to 31 Texas Administrative Code §355.3, the Texas Water Development Board (TWDB) requests the submission of Statements of Qualifications leading to the possible award of contracts for groundwater related studies for two separate projects. We expect to get separate Statements of Qualifications specific for each project. The projects should take no more than three years to complete.

Details on the research projects and project requirements are available from the TWDB website http://www.twdb.state.tx.us/about/contract_admin/RFQ/. The TWDB website site includes (1) guidelines for the Statements of Qualifications, (2) copies of the attachments, (3) a list of Statement of Qualifications Review Criteria, and (4) some supporting material.

Background
Groundwater availability models were an outgrowth of the regional water planning process created by Senate Bill 1, 75th Legislative Session. They were developed or obtained by the TWDB in response to groundwater conservation district and regional water planning group needs for better scientific tools to assist them in their management and planning efforts of the groundwater resources in their area. Because of the demonstrated value of these models, in 2001 the Texas Legislature mandated that the TWDB obtain or develop groundwater availability models for all major and minor aquifers in Texas in coordination with groundwater conservation districts and regional water planning groups (Texas Water Code, Section 16.012). When House Bill 1763, 79th Legislative Session, became effective on September 1, 2005, groundwater availability models became an even more important tool in managing the state's groundwater resources. This law mandated that groundwater conservation districts and regional water planning groups use values of managed available groundwater, based on the desired future conditions of aquifers determined for the 16 groundwater management areas, in their management and regional water plans. During the last legislative session in 2011, managed available groundwater was revised to modeled available groundwater. Groundwater availability models have been and will continue to be used as planning tools for our groundwater resources in Texas.

Description of Research Objectives
Since 1999, the Texas Legislature has approved funding for the Groundwater Availability Modeling Program. The purpose of the Groundwater Availability Modeling Program is to provide reliable and timely information on available groundwater to the citizens of Texas to ensure adequate supplies or recognize inadequate supplies over a 50-year planning period. Having the tools to explain the dynamics of groundwater flow in aquifers and to educate non-modelers on numerical groundwater flow models has increasingly been an area needing improvement. In addition, as part of the modeling program, we periodically reassess the existing models for updates as a result of the collection of new data that improves our understanding of the aquifer systems and/or how they

respond to stresses upon the system, as well as to better address the needs and objectives of planning by groundwater conservation districts and regional water planning groups.

Research Objectives for the Development of Educational Videos Representing Texas Aquifers and Numerical Groundwater Flow Models

An important and essential component of the Groundwater Availability Modeling Program is to continually develop better tools to aid in the understanding and analyses of the aquifers in Texas. Therefore, the objective of this project is to create at least four (4) to five (5) short (5 to 10 minute) video modules using three-dimensional (3-D) visualization tools (note: a 3-D introduction was previously developed by C-Tech in MVS), as applicable, demonstrating the basic differences and similarities in aquifers across the state; how aquifers respond differently to stresses in the confined portion versus the unconfined portion of the aquifers; the concept of a water budget, especially as it relates to a numerical groundwater flow model; what is a regional scale numerical groundwater flow model (MODFLOW) such as those developed for the Groundwater Availability Modeling Program; and a brief overview of how groundwater availability models can be used (and not used) for planning purposes. We expect the deliverables to be equivalent to televised videos shown on the Discovery Channel or National Geographic. The outcome of the project, accessible to anyone through the TWDB website, is meant to educate and to promote the participation of stakeholders in the management of their groundwater resources. Accessibility requirements for the hearing and visual impaired shall be followed including closed captions and transcripts.

Monthly progress reports must be submitted to the TWDB outlining progress of the project and include the original schedule timeline and how the project is progressing relative to this standard. Project invoices cannot be processed without detailed description of the progress made by tasks. Each of the project tasks must be described in detail consistent with the budget description. We expect issues to be reported to the TWDB contract manager as they appear.

Draft and final deliverables shall include:

1. High definition videos (720p or 1080p) on FLASH/HDD/CD/DVD media (MP4, M4Vfiles using a high quality h264 or x264 codec).
2. At least one video should include a time series animation of water level fluctuations through time.
3. The videos must have closed captions (in the form of XML files) for the hearing impaired and transcripts for the visually challenged.
4. A report on the project detailing approach, methods, issues, and recommendations for the future (hard copy and electronic versions in both Microsoft Word format and in Adobe Acrobat PDF compatible format).

The following issues need to be addressed in the Statement of Qualifications:

1. Approach to translating a groundwater flow model to an animated 3D visual model.
2. Approach to inclusion of reference data (administrative boundaries, hydrological features, wells, etc.) for spatial referencing of the three-dimensional model.
3. Previous animations and/or interactive three-dimensional visualizations of natural phenomena or models of the natural world, delivered over the web.
4. Total budget broken down per video module.

In addition, we expect potential contractors to indicate their abilities in:

1. Innovative and creative solutions;
2. technology transfer;
3. producing high-quality graphics, videos, and multi-media; and
4. meeting deadlines within budget. Note: contract time extensions will be granted only in extreme cases.

At a minimum, TWDB staff expects to meet with the project team at the beginning of the project and at the midpoint of the project. Coordination with TWDB staff will be critical throughout the project and should include various milestones meetings either in person or through a venue such as webinars to discuss storyboards, animations, transcripts, and video modules. A formal presentation discussing and presenting the results shall be given to TWDB staff at the end of the project as well as a public screening (www.texasthestateofwater.org/screening). The Statement of Qualifications shall not be more than 20 pages in length, excluding qualifications and experience of project staff and HUB plan. Applicants should be familiar with standards and requirements for the groundwater availability models associated with the Groundwater Availability Modeling Program.

Description of Funding Consideration

Up to $900,000 has been identified for water research assistance from the Water Assistance Fund for research on these two projects with $600,000 for the High Plains Aquifer System modeling project and $300,000 for the educational videos project. Funding will be split between fiscal years 2012 and 2013. Funds allocated from fiscal year 2013 is contingent on agency funding. Following the receipt and evaluation of all Statements of Qualifications, the TWDB may adjust the amount of funding initially authorized. Oral presentations may be required as part of qualification review. However, an invitation for oral presentation is not an indication of probable selection. Up to 100 percent funding may be provided to individual applicants; however, applicants are encouraged to contribute matching funds or services, and funding will not include reimbursement for indirect expenses incurred by political subdivisions of the state or other state and federal agencies. In the event that acceptable Statements of Qualifications are not submitted, the TWDB retains the right to not award funds for the contracts.

Deadline, Review Criteria, and Contact Person for Additional Information. Six double-sided copies of a complete Statements of Qualifications, including the required attachments, must be filed with the TWDB prior to 12:00 noon, Thursday, May 31, 2012. Statements of Qualifications must be directed either in person to Mr. David Carter, Texas Water Development Board, Stephen F. Austin Building, 1700 North Congress Avenue, Austin, Texas 78701; or by mail to Mr. David Carter, Texas Water Development Board, P.O. Box 13231-Capitol Station, Austin, Texas 78711-3231. Statements of Qualifications will be evaluated according to 31 Texas Administrative Code §355.5 and the Statements of Qualifications Review Criteria rating form included in the TWDB's Guidelines for Water Research Grants. Research shall not duplicate work planned or underway by state agencies. All potential applicants must contact the TWDB to obtain these guidelines.

Requests for information, the TWDB's rules covering the Research and Planning Fund, detailed evaluation criteria, more detailed research topic information, and the guidelines may be directed

to Mr. David Carter at the preceding address or by calling (512) 936-6079. All technical questions should be directed to Ms. Cindy Ridgeway at (512) 936-2386.

Issued in Austin, Texas _____, 2012.

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Ingrid Hansen, Deputy General Counsel
Texas Water Development Board

Attachment B

Summary of Staff Recommendation

Topic: Develop a numerical groundwater flow model for the High Plains Aquifer System. Part of this project will be to re-evaluate the preferential flow between the aquifers that comprise the aquifer system and to re-evaluate their boundaries in the subsurface using the geophysical well logs compiled by TWDB's Innovative Water Technologies Division. Additional information from the groundwater conservation districts located in the study area should be requested, reviewed, and used, as applicable, to the modeling effort. As part of this project, we also want an evaluation of the location and volume of historical pumping (not limited to 1980 - 1999 and not restricted to the TWDB Water Use Survey).

Proposed Project Funding: The total amount of TWDB grant funds to be allocated for this research topic is not to exceed $600,000 ($520,000.00 from fiscal year 2012 Water Assistance Fund budget and $80,000 from fiscal year 2013 General Revenue transferred to the Water Assistance Fund budget per rider 3 and for reimbursement for services rendered in fiscal year 2013).

Applicants: INTERA Incorporated
Daniel B. Stephens & Associates, Inc.
AMEC Environment and Infrastructure, Inc.

Staff Recommendation: Staff recommends that TWDB authorize the executive administrator to negotiate and execute a contract with INTERA Incorporated. If contracts cannot be negotiated with the top-ranked candidate, TWDB staff will proceed with contract negotiations with the second-ranked candidate.

ITEM SUMMARY	**CONSENT**	**July 11, 2012**
The application and documentation submitted by the applicant for consideration for this project has been reviewed by the Support Services and Contract Division and has been determined administratively sufficient for the TWDB's consideration.	Signature	David Carter
I have reviewed the application and legal documentation submitted by the applicant and have determined that the application contains the information required by the applicable statutes and rules for consideration by the TWDB.	Signature	Deputy General Counsel

Study Duration: The duration of the study will be negotiated with the contractor by TWDB staff.
Task and Expense Budget: Task budget and expense budgets will be negotiated with the contractor by TWDB staff.

Summary of Staff Recommendation

Topic: An important and essential component of the Groundwater Availability Modeling Program is to develop better tools to aid in the understanding and analyses of the aquifers in Texas. Therefore, the objective of this project is to create at least four (4) to five (5) short (5 to 10 minute) video modules using three-dimensional (3-D) visualization tools demonstrating the basic differences and similarities in aquifers across the state; how aquifers respond differently to stresses in the confined portion versus the unconfined portion of the aquifers; the concept of a water budget as it relates to a numerical groundwater flow model; what is a regional scale numerical groundwater flow model (MODFLOW) such as those developed for the Groundwater Availability Modeling Program; and a brief overview of how groundwater availability models can be used (and not used) for planning purposes.

Proposed Project Funding: The total amount of TWDB grant funds to be allocated for this research topic is not to exceed $300,000 ($200,135 from fiscal year 2012 Water Assistance Fund budget and $99,865 from fiscal year 2013 General Revenue transferred to the Water Assistance Fund budget per rider 3 and for reimbursement for of services rendered in fiscal year 2013).

Applicants: RPS Espey
Laura Raun Public Relations
AMEC Environment and Infrastructure, Inc.
KW Thompson & Associates dba Thompson Marketing
Hamline University Center for Global Environmental Education

Staff Recommendation: Staff recommends that TWDB authorize the executive administrator to negotiate and execute a contract with RPS Espey. If contracts cannot be negotiated with the top-ranked candidate, TWDB staff will proceed with contract negotiations with the second-ranked candidate.

ITEM SUMMARY	**CONSENT**	**July 11, 2012**
The application and documentation submitted by the applicant for consideration for this project has been reviewed by the Support Services and Contract Division and has been determined administratively sufficient for the TWDB's consideration.	Signature	David Carter
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Study Duration: The duration of the study will be negotiated with the contractor by TWDB staff.
Task and Expense Budget: Task budget and expense budgets will be negotiated with the contractor by TWDB staff.